

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>P33807-P0</b>	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. <b>PCT/JP2004/004495</b>	International filing date (day/month/year) <b>30/03/2004</b>	(Earliest) Priority Date (day/month/year) <b>31/03/2003</b>
Applicant <b>MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box II).

3. ☒ **Unity of invention is lacking** (see Box III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows: \_\_\_\_\_

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regards to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP2004/004495

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04L7/04 H04L7/10 H04L27/00 H04L27/26

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X          A	KELLER T ET AL: "ORTHOGONAL FREQUENCY DIVISION MULTIPLEX SYNCHRONISATION TECHNIQUES FOR WIRELESS LOCAL AREA NETWORKS" 15 October 1996 (1996-10-15), IEEE INTERNATIONAL SYMPOSIUM ON PERSONAL, INDOOR AND MOBILE RADIO COMMUNICATIONS, XX, XX, PAGE(S) 963-967, XP002063294 page 963, right-hand column, last paragraph - page 964, left-hand column, paragraph 1 page 964, right-hand column, paragraph 3; figures 2,3  -----  -/--	15-18          1,5, 8-10,19, 20

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*8\* document member of the same patent family

Date of the actual completion of the international search

23 June 2004

Date of mailing of the international search report

29/06/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Pieper, T

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/JP2004/004495

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 049 577 A (GOTHE MARLO RENE ET AL) 11 April 2000 (2000-04-11) column 3, line 29 - line 55 column 4, line 1 - line 3 column 4, line 14 - line 23 figure 4	15,17
A	EP 0 556 807 A (NIPPON ELECTRIC CO) 25 August 1993 (1993-08-25) page 4, line 5 - line 29 page 4, line 41 - page 5, line 10 page 5, line 42 - page 6, line 58 figure 2	1,8-10
A	D'ARIA G ET AL: "SYNCHRONIZATION TECHNIQUES AND VITERBI EQUALIZERS FOR TDMA MOBILE RADIO" TECHNICAL REPORTS - CSELT, TURIN, IT, vol. 17, no. 2, 1 April 1989 (1989-04-01), pages 125-131, XP000575030 ISSN: 0393-2648 page 127, left-hand column, paragraph 3; figure 4	1,8-10, 15-20
A	WO 99/53666 A (BADRI SABAH ; LIPP STEFAN (DE); EBERLEIN ERNST (DE); BUCHHOLZ STEPHAN) 21 October 1999 (1999-10-21) abstract	1-20
A	& PATENT ABSTRACTS OF JAPAN vol. 2000, no. 22, 9 March 2001 (2001-03-09) & JP 2001 136149 A (NIPPON TELEGR & TELEPH CORP <NTT>), 18 May 2001 (2001-05-18) cited in the application abstract	
A	MEHLAN R ET AL: "EFFICIENT PREAMBLE DESIGN FOR DIGITAL DMSK PACKET SYNCHRONIZATION" SERVING HUMANITY THROUGH COMMUNICATIONS. SUPERCOMM/ICC. NEW ORLEANS, MAY 1 - 5, 1994, INTERNATIONAL CONFERENCE ON COMMUNICATIONS (ICC), NEW YORK, IEEE, US, vol. VOL. 2, 1 May 1994 (1994-05-01), pages 918-922, XP000438640 page 918, right-hand column, paragraph 2 - page 920, left-hand column, paragraph 2 figures 1,2	1,8-10, 15,17
	----- -/--	

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP2004/004495

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>MILLER M ET AL: "AN INNOVATIVE SYNCHRONIZATION PREAMBLE FOR UHF MILSATCOM" MILCOM 1999. IEEE MILITARY COMMUNICATIONS CONFERENCE PROCEEDINGS. ATLANTIC CITY, NJ, OCT 31 - NOV. 3, 1999, IEEE MILITARY COMMUNICATIONS CONFERENCE, NEW YORK, NY : IEEE, US, vol. VOL. 2 OF 2 CONF. 18, 31 October 1999 (1999-10-31), pages 1338-1342, XP000922185 ISBN: 0-7803-5539-3 page 1340, left-hand column, paragraph 2 - page 1341, left-hand column, paragraph 1 -----</p>	15,17

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-14

Frequency synchronization using correlation of a  
synchronization waveform occurring at least twice and average  
phase difference of the correlation and transition of  
absolute phase of the correlation

1.1. claims: 15-20

Generation of a synchronization symbol occurring at least  
twice

---

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/JP2004/004495

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP2004/004495

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6049577	A	11-04-2000	AU 4097499 A	13-12-1999
			CA 2333459 A1	02-12-1999
			CN 1303551 T	11-07-2001
			EP 1082834 A1	14-03-2001
			WO 9962218 A1	02-12-1999
EP 0556807	A	25-08-1993	JP 2812347 B2	22-10-1998
			JP 5227235 A	03-09-1993
			AU 659382 B2	11-05-1995
			AU 3313793 A	19-08-1993
			CA 2089620 A1	18-08-1993
			DE 69318201 D1	04-06-1998
			DE 69318201 T2	17-12-1998
			EP 0556807 A2	25-08-1993
			US 5363415 A	08-11-1994
WO 9953666	A	21-10-1999	WO 9953666 A1	21-10-1999
			AT 207681 T	15-11-2001
			AU 749787 B2	04-07-2002
			AU 7335098 A	01-11-1999
			BR 9815806 A	28-11-2000
			CA 2328169 A1	21-10-1999
			DE 69802212 D1	29-11-2001
			DE 69802212 T2	27-06-2002
			DK 1072137 T3	11-02-2002
			EA 2529 B1	27-06-2002
			EP 1072137 A1	31-01-2001
			HK 1036710 A1	31-10-2003
			JP 3429747 B2	22-07-2003
			JP 2002511710 T	16-04-2002
			TW 417370 B	01-01-2001
			ZA 9803645 A	04-11-1998